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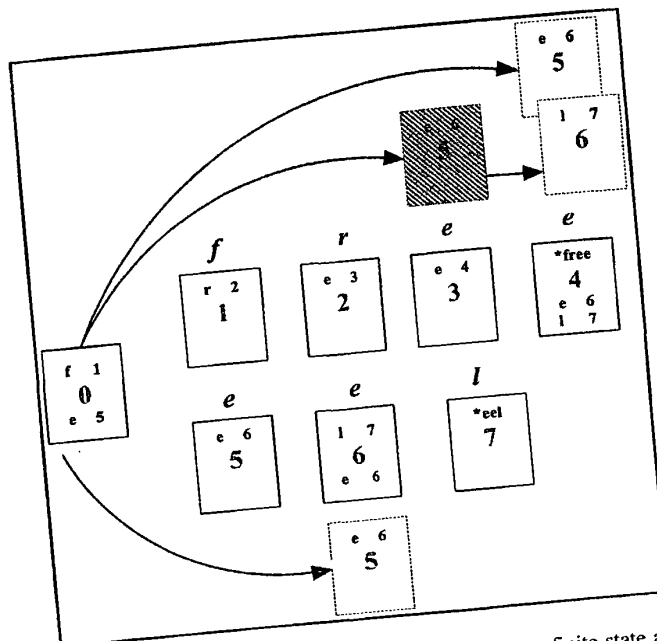
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(54) Title: SYSTEM AND METHOD OF PARALLEL PATTERN MATCHING



(57) Abstract: The present invention provides systems and methods for creating a finite state automata (FSA) (figure 1, blocks 110-180) that matches patterns in parallel including the steps of creating states of the automata from a set of patterns to be matched (figure 2, blocks 210-280) and passing over the patterns a second time adding transitions to the states to match all the possible patterns that can start within the pattern (figure 3, blocks 0-7).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AMENDED CLAIMS

[received by the International Bureau on 19 January 2004 (19.01.04);
claims 1-3, 5,6 unchanged]

CLAIMS

What is claimed is:

1. A method for creating finite state automata (FSA) that match patterns in parallel, comprising:
creating states of the finite state automata from a set of patterns to be matched;
passing over the set of patterns a second time; and
adding transitions to the states to match all possible patterns that can start within the set of patterns to be matched.
2. The method of claim 1 further comprising:
iterating through the states;
determining whether input causes a move to an initial state; and
if the initial state has a different move on the input, changing a current state's transition to mirror that of the initial state.
3. A method of creating a FSA that uses array-based transitions for an alphabet of size N, comprising:
representing each state as an object containing an array of N pointers to possible successive states;
using a numeric value of each member of the alphabet as an offset into the array to point to a next state.
4. A method of creating a case-insensitive FSA by making each pattern all one case, comprising:
creating the FSA; and
adding corresponding transitions on each alphabetic character such that testing and conversion of case is not required.
5. A method for matching patterns, comprising:
using a numeric value of less than a complete set of bits of an input as an offset into an array, thereby reducing a size of the array.

6. The method of claim 5 comprising a further step of using a hash function for matching patterns composed of a 128 or 256 alphabet without overhead of larger arrays.